

Clean Version Of Amended Claims

1. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a contact, a first side and an opposing second side;

forming an opening in the contact;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

directing a laser beam through the opening and at the substrate without touching the contact to form a lasered opening through the substrate;

forming a conductive member in the lasered opening;

forming a first external contact on the first electrically insulating layer in electrical communication with the conductive member; and

forming a second external contact on the second electrically insulating layer in electrical communication with the conductive member.

2. (amended) The method of claim 1 wherein the contact comprises metal and the substrate comprises a semiconductor.

4. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side and an opposing second side;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

directing a laser beam at the substrate to form a lasered opening through the substrate;

forming a conductive member in the lasered opening having a first enlarged terminal portion[s] and a second enlarged terminal portion;

forming a first external contact on the first enlarged terminal portion; and

forming a second external contact on the second enlarged terminal portion.

5. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side comprising a metal;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate without touching the metal to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side in electrical communication with the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member.

7. (amended) The method of claim 5 wherein the contact is in electrical communication with integrated circuits on the substrate.

9. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side in electrical communication with the conductive member, the first external contact comprising a first enlarged terminal portion of the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member, the second external comprising a second enlarged terminal portion of the conductive member.

10. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side comprising a first concave segment of the conductive member; and

forming a second external contact on the second side comprising a second concave segment of the conductive member.

11. (amended) The method of claim 10 wherein the contact is in electrical communication with integrated circuits on the substrate.

12. (amended) The method of claim 10 wherein the substrate comprises a semiconductor die and the contact comprises a bond pad on the die.

13. (amended) The method of claim 5 wherein the substrate comprises a semiconductor material and further comprising forming an insulating layer in the via prior to forming the conductive member.

14. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate having a contact, a first side and an opposing second side;

forming a mask on the first side having an opening therein;

etching a second opening in the contact using the mask;

directing a laser beam at the second opening and through the substrate without touching the contact to form a via in the substrate;

depositing a conductive member in the via having a first terminal portion proximate to the first side and a second terminal portion proximate to the second side;

stripping the mask;

forming a first non-oxidizing layer on the first terminal portion; and

forming a second non-oxidizing layer on the second terminal portion,

15. (amended) The method of claim 14 wherein the contact comprises a metal.

19. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate having a first side, an opposing second side and a contact on the first side;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to form a via aligned with the contact;

forming a conductive member in the via and in the opening having a first terminal portion proximate to the first side, and a second terminal portion proximate to the second side;

forming a first non-oxidizing layer on the first terminal portion and on the first electrically insulating layer; and

forming a second non-oxidizing layer on the second terminal portion and on the second electrically insulating layer.

20. (amended) The method of claim 19 wherein during the directing step the laser beam does not touch the contact.

26. (amended) A method for fabricating a semiconductor component comprising:

providing a substrate comprising a first side, an opposing second side, and a contact on the first side having an opening therein;

directing a laser beam through the opening at the first side without touching the contact to form a counter bored via in the substrate;

forming a conductive member in the via;

thinning the substrate from the second side to expose the conductive member;

forming a first external contact on the first side in electrical communication with the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member.

28. (amended) The method of claim 26 wherein the substrate comprises a semiconductor die having a plurality of integrated circuits and the contact is in electrical communication with the integrated circuits.

29. (amended) The method of claim 26 wherein the substrate comprises a semiconductor wafer.

Clean Version Of All Pending Claims

1. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a contact, a first side and an opposing second side;

forming an opening in the contact;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

directing a laser beam through the opening and at the substrate without touching the contact to form a lasered opening through the substrate;

forming a conductive member in the lasered opening;

forming a first external contact on the first electrically insulating layer in electrical communication with the conductive member; and

forming a second external contact on the second electrically insulating layer in electrical communication with the conductive member.

2. (amended) The method of claim 1 wherein the contact comprises metal and the substrate comprises a semiconductor.

3. The method of claim 1 further comprising forming non-oxidizing layers on the first external contact and on the second external contact.

4. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side and an opposing second side;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

directing a laser beam at the substrate to form a lasered opening through the substrate;

forming a conductive member in the lasered opening having a first enlarged terminal portion and a second enlarged terminal portion;

forming a first external contact on the first enlarged terminal portion; and

forming a second external contact on the second enlarged terminal portion.

5. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side comprising a metal;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate without touching the metal to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side in electrical communication with the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member.

6. The method of claim 5 wherein the opening surrounds a portion of the substrate and the laser beam pierces the substrate on the portion.



7. (amended) The method of claim 5 wherein the contact is in electrical communication with integrated circuits on the substrate.

8. The method of claim 5 further comprising forming non-oxidizing layers on the first external contact and on the second external contact.

9. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side in electrical communication with the conductive member, the first external contact comprising a first enlarged terminal portion of the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member, the second external comprising a second enlarged terminal portion of the conductive member.

10. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate comprising a first side, an opposing second side and a contact on the first side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to laser drill a via aligned with the opening;

forming a conductive member in the via in electrical communication with the contact;

forming a first external contact on the first side comprising a first concave segment of the conductive member; and

forming a second external contact on the second side comprising a second concave segment of the conductive member.

11. (amended) The method of claim 10 wherein the contact is in electrical communication with integrated circuits on the substrate.

12. (amended) The method of claim 10 wherein the substrate comprises a semiconductor die and the contact comprises a bond pad on the die.

13. (amended) The method of claim 5 wherein the substrate comprises a semiconductor material and further comprising forming an insulating layer in the via prior to forming the conductive member.

14. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate having a contact, a first side and an opposing second side;

forming a mask on the first side having an opening therein;

etching a second opening in the contact using the mask;

directing a laser beam at the second opening and through the substrate without touching the contact to form a via in the substrate;

depositing a conductive member in the via having a first terminal portion proximate to the first side and a second terminal portion proximate to the second side;

stripping the mask;

forming a first non-oxidizing layer on the first terminal portion; and

forming a second non-oxidizing layer on the second terminal portion,

15. (amended) The method of claim 14 wherein the contact comprises a metal.

16. The method of claim 14 further comprising forming a first insulating layer on the first side prior to forming the mask and forming the mask on the first insulating layer.

17. The method of claim 14 further comprising forming a second insulating layer on the second side and forming the second external contact on the second insulating layer.

18. The method of claim 14 wherein the substrate comprises a semiconductor material and further comprising electrically insulating the via prior to depositing the conductive member.

19. (amended) A method for fabricating a semiconductor component or an interconnect for semiconductor components comprising:

providing a substrate having a first side, an opposing second side and a contact on the first side;

forming a first electrically insulating layer on the first side and a second electrically insulating layer on the second side;

forming an opening in the contact;

directing a laser beam at the opening and through the substrate to form a via aligned with the contact;

forming a conductive member in the via and in the opening having a first terminal portion proximate to the first side, and a second terminal portion proximate to the second side;

forming a first non-oxidizing layer on the first terminal portion and on the first electrically insulating layer; and

forming a second non-oxidizing layer on the second terminal portion and on the second electrically insulating layer.

20. (amended) The method of claim 19 wherein during the directing step the laser beam does not touch the contact.

21. The method of claim 19 wherein forming the conductive member comprises electroless deposition and the first terminal portion and the second terminal portion comprise concave segments.

22. The method of claim 19 wherein the substrate comprises a semiconductor die and the contact comprises a bond pad.

23. The method of claim 19 further comprising forming a mask on the substrate, forming the opening using the mask, and stripping the mask following the directing step.

24. The method of claim 19 wherein the substrate comprises a ceramic or a plastic material.

25. The method of claim 19 wherein the substrate comprises a semiconductor material and further comprising

electrically insulating the via prior to forming the conductive member.

26. (amended) A method for fabricating a semiconductor component comprising:

providing a substrate comprising a first side, an opposing second side, and a contact on the first side having an opening therein;

directing a laser beam through the opening at the first side without touching the contact to form a counter bored via in the substrate;

forming a conductive member in the via;

thinning the substrate from the second side to expose the conductive member;

forming a first external contact on the first side in electrical communication with the conductive member; and

forming a second external contact on the second side in electrical communication with the conductive member.

27. The method of claim 26 wherein the thinning step is performed using chemical mechanical planarization.

28. (amended) The method of claim 26 wherein the substrate comprises a semiconductor die having a plurality of integrated circuits and the contact is in electrical communication with the integrated circuits.

29. (amended) The method of claim 26 wherein the substrate comprises a semiconductor wafer.

30. The method of claim 26 wherein the substrate comprises a semiconductor, a ceramic or a plastic.

31. The method of claim 26 further comprising forming a first non-oxidizing metal layer on the first external

contact and forming a second non-oxidizing metal layer on the second external contact.